

MCG 1010M

Magnetostrictive Receiver

The MCG 1010M Magnetostrictive Receiver is engineered for terminal operators, refinery engineers, chemical technicians, and EPC integrators who require precise continuous level and temperature monitoring, safe calibration in hazardous environments, and flexible communications for modern or legacy systems. Using true magnetostrictive technology, it delivers 0.001-inch resolution with digital repeatability for custody transfer, inventory control, and environmental compliance. The explosion-proof housing, graphical LCD, and infrared calibration enable safe, sealed operation without opening enclosures or climbing tanks.

The 1010M integrates seamlessly with the MCG 8150/8190 probe family and supports Tankway, Modbus, HART, Profibus, and WirelessHART for straightforward retrofit or new-build integration. Optional analog and discrete I/O allow tank-side automation, while dual RTD temperature inputs enable accurate volume correction. Built-in surge protection and rugged construction ensure dependable operation in tank farms exposed to lightning, corrosive vapors, and harsh weather. Designed for continuous service with minimal maintenance, the MCG 1010M provides a reliable, field-proven solution for industries requiring accurate real-time level and temperature data.



Key Features

High-Resolution Measurement Magnetostrictive sensing provides continuous digital readings with 0.001-inch repeatability, ensuring custody-grade inventory accuracy and reliable volume correction across all product types.	Safe Infrared Calibration Intrinsically safe IR calibration allows full configuration without opening housings, eliminating tank climbs, hot-work requirements, and exposure to hazardous atmospheres.	Multi-Protocol Integration Tankway, Modbus, HART, Profibus, and WirelessHART support enable effortless retrofit or new-system connectivity without rewiring or major infrastructure changes.
Temperature Compensation Dual RTD inputs support spot or multi-point averaging, ensuring accurate corrected volumes and improved product-quality verification for regulatory and operational requirements.	Surge and Lightning Protection Integrated surge-protection circuitry safeguards electronics from transients, increasing uptime and long-term reliability in exposed terminal and tank-farm environments.	Hazardous-Area Certification Explosion-proof and intrinsically safe approvals support safe operation in Class I Div 1 areas, enabling compliance with NEC, API, and global safety standards.

Typical Applications



CUSTODY TRANSFER

Provides precise, legally defensible level and temperature data for billing, reconciliation, and regulatory audits in petroleum and chemical storage.



HAZARDOUS-AREA CALIBRATION

Enables safe tank-side configuration using infrared tools, eliminating enclosure opening and reducing ignition risk in classified environments.



RETROFIT INTEGRATION

Replaces older transmitters using Tankway or Modbus, maintaining existing wiring while modernizing accuracy and diagnostic capabilities.



CORROSIVE ENVIRONMENTS

Sealed housing and surge isolation protect electronics in outdoor tanks exposed to chemicals, vapors, and weather-related electrical stress.



TEMPERATURE-CRITICAL PRODUCTS

Dual RTDs support accurate temperature averaging for products like fuels, chemicals, and specialty liquids requiring precise volume correction.



MULTI-TANK AUTOMATION

Supports centralized monitoring with digital bus networks, reducing cabling and enabling unified control of level, temperature, and alarms.

Benefits



Precision Accuracy

Continuous magnetostrictive measurement eliminates drift and improves inventory reconciliation, ensuring reliable volume reporting for critical storage assets.



Low Maintenance

With virtually no moving parts, the system reduces wear, calibration needs, and service visits, extending operational uptime.



Enhanced Safety

Infrared calibration removes the need for tank climbs or enclosure opening, minimizing operator exposure to hazardous locations.



Simple Integration

Multi-protocol compatibility ensures plug-and-play installation with existing controls, streamlining upgrades and reducing engineering effort.



Electrical Protection

Built-in surge and lightning isolation reduces failures in exposed tank farms, improving system reliability during harsh weather.



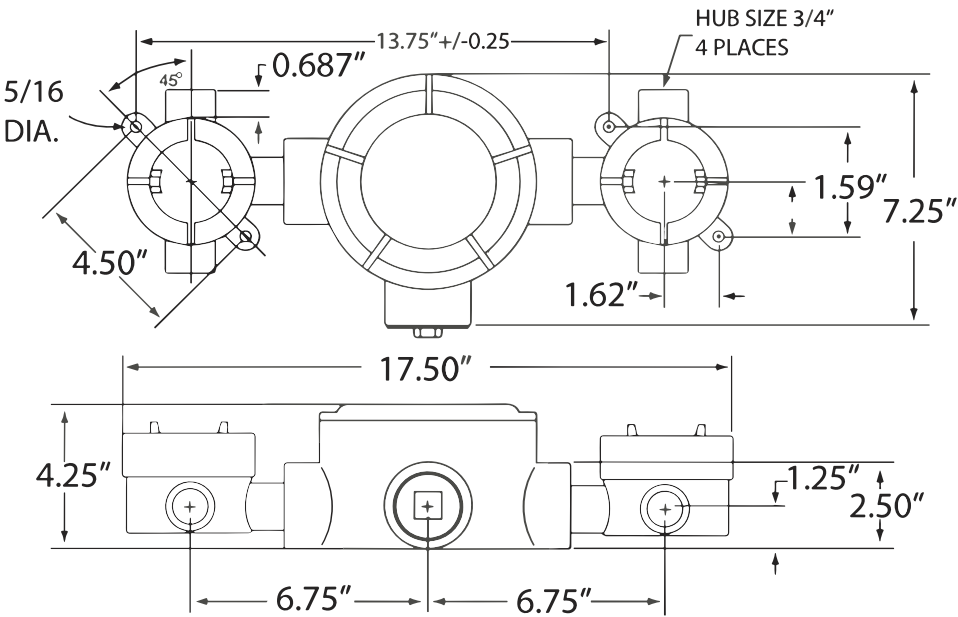
Regulatory Compliance

Certified Class I Div 1 construction and traceable data support API, OSHA, and environmental audit requirements for critical facilities.

Technical Specifications & Key Features

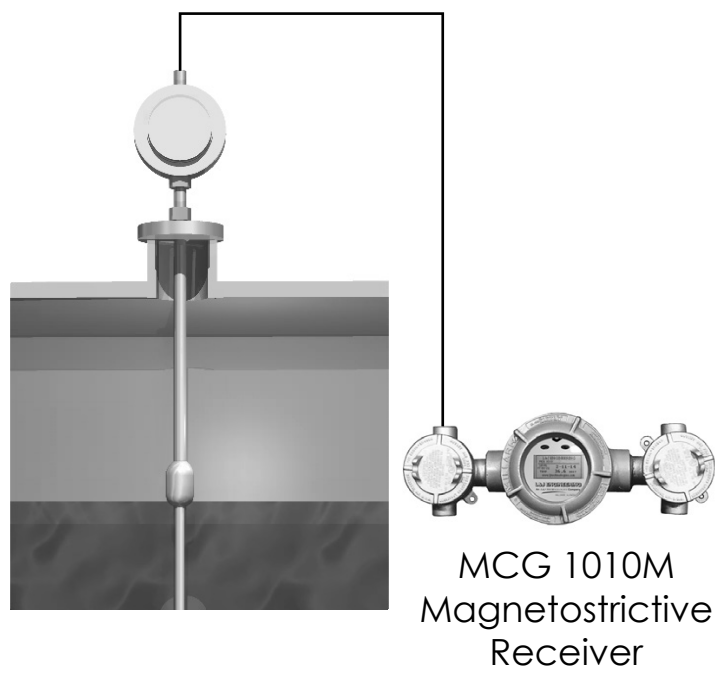
Measurement Resolution:	0.001 inch (with MCG 8150 series probe)
Display:	4-line × 20 char graphical LCD (backlit)
Communication Protocols:	L&J Tankway (standard); Modbus RTU (2- or 4-wire); HART; Profibus DP; WirelessHART; RS-232; Varec Matrix; Enraf Interface
Calibration Method:	MCG 2150 Infrared Smart Calibrator (Intrinsically Safe)
Power Supply:	12 – 70 VDC (loop powered); optional AC inputs (24–220 VAC)
Operating Temperature:	–30 °F to +160 °F (–34 °C to +71 °C)
I/O Options:	(2) Analog Inputs / Outputs (4–20 mA or 10–50 mA); (4) Discrete Inputs; (4) Discrete Outputs; (2) Pulse Inputs from flow meters
Temperature Inputs:	Dual RTDs (spot or average up to 14 points)
Cable Length – Probe:	Up to 1000 ft (305 m)
Cable Length – Control Room:	Up to 10 miles (16 km)
Construction:	Cast aluminum enclosure, epoxy-sealed electronics
Safety Ratings (Enclosure):	Explosion Proof UL/CSA; Intrinsic Safety UL/FM (Class I Groups C & D)
Surge Protection:	Integrated gas-tube and transzorb lightning protection network
Optional Features:	Relay outputs (4 × 1 A @ 110 VAC), density input via MCG 8190 probe, pressure input (analog or Modbus register 30004/40004)

Dimensions



Typical System Layout

MCG 1030, 8150B, 8151 8190A
Magnetostrictive Probe



Model Number Selection

The model number will consist of a base number MCG 1010M followed by 6 digits.
These digits will represent 3 sets of option tables:

AB • SIGNAL/OUTPUT OPTIONS	
31	None
32	L&J Tankway
33	4-20 mA Analog Output
35	Dual 4-20 mA, Level & Temperature
36	GPE 31422, 31423
37	Varec 4-Wire
38	Varec Matrix
40	RS-232 Output
46	Enraf Interface
47	Dual 4-20 mA Output, Level and BS&W
48	Dual 4-20 mA Output, Level and Density
49	HART
50	Modbus on L&J Tankway
51	Modbus on RS-485 Highway (2-Wire)
52	Modbus on RS-485 Highway (4-Wire)
60	Ti-Way Interface
61	Profibus DP
62	WirelessHART

CD • ANALOG INPUT/TEMPERATURE/RELAY	
02	None
03	Internal RTD* (1-5 Points)
06	Spot Temperature**
07	Average Temperature***
15	Internal RTD* (1-5 Points), 4 Relays
18	Spot Temperature**, 4 Relays
19	Average Temp.*** (Up to 14 Points), 4 Relays

EF • POWER SUPPLY	
21	48 VDC - Standard (12-70 VDC)

* Only available with MCG 8150B, MCG 8151 or MCG 8190A Probe.
** RTD Probe must be ordered separately.
*** Requires MCG 2350 Average Temperature Assembly and Average Temperature bulb (ordered separately).

Summary

With over a century of tank-gauging innovation, L&J Technologies delivers precision measurement and dependable control across global storage operations. The MCG 1010M Magnetostrictive Receiver exemplifies that heritage—combining digital-grade accuracy, rugged hazard-area design, and multi-protocol connectivity in a compact, service-friendly package. For new builds or retrofit upgrades, choosing Cognesense means fewer field calls, safer operations, and verified data integrity across every tank.

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